GN 13-5

# PUBLIC SAFETY COMMUNICATIONS IN A TIME OF TRANSITION
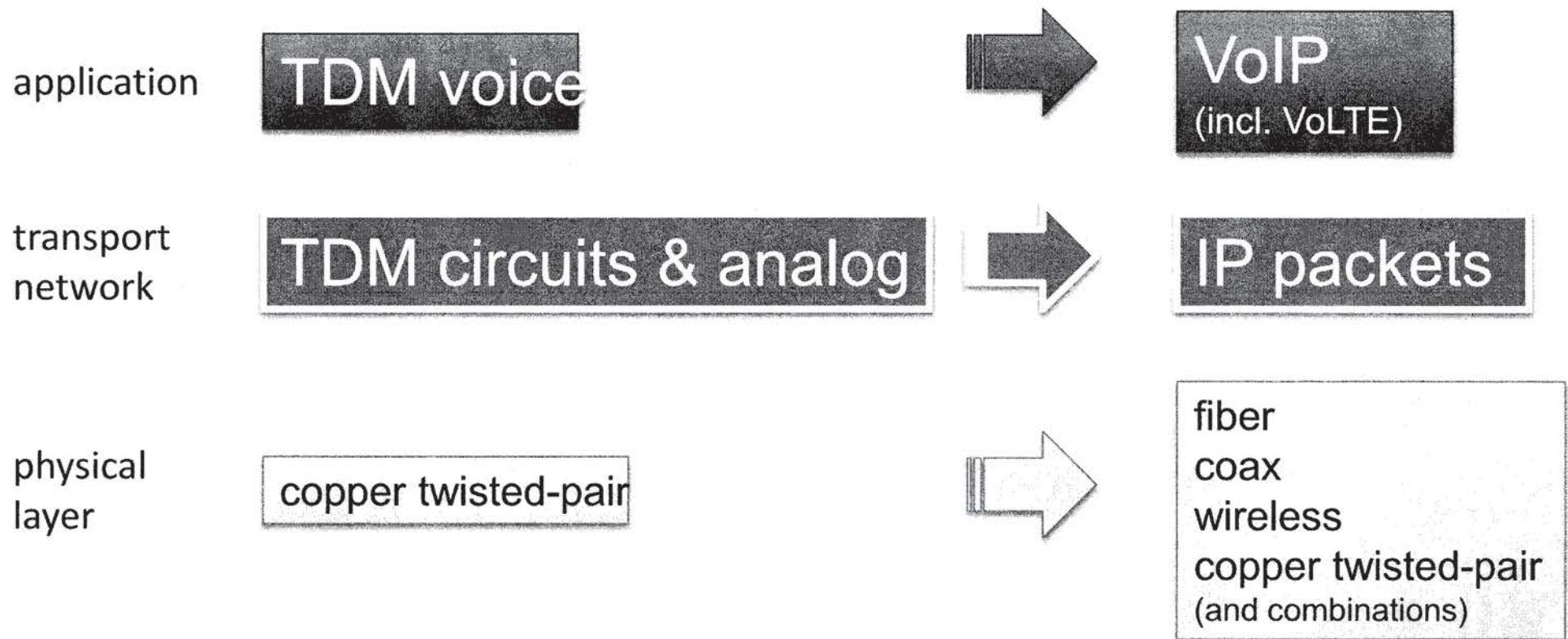
Henning Schulzrinne

FCC

FCC Workshop April 17, 2014

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# TECHNOLOGY TRANSITIONS

# Technology Transitions

| | | |
|---|---|---|
| application | TDM voice | → | VoIP (incl. VoLTE) |
| transport network | TDM circuits & analog | → | IP packets |
| physical layer | copper twisted-pair | → | fiber / coax / wireless / copper twisted-pair (and combinations) |

# Switches are ageing
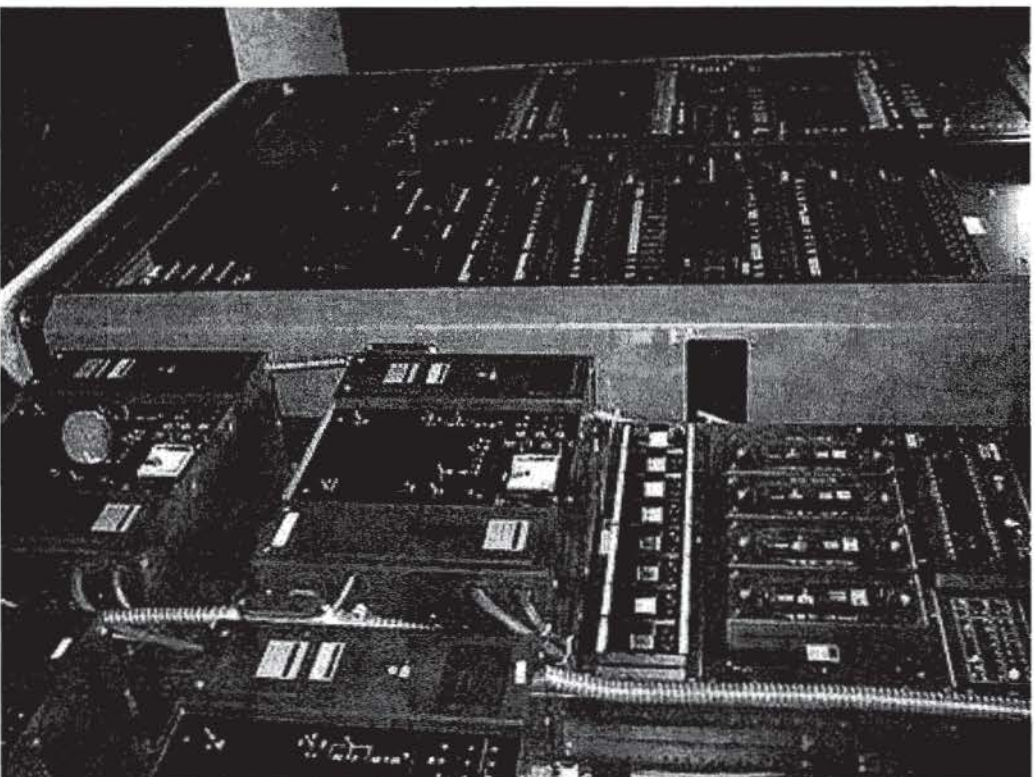
Nortel DMS-100

http://www.phworld.org/switch/ntess.htm

1979

# CAMA trunks

Wednesday, Feb. 16, 2011

## Montgomery's 911 troubles appear widespread

At least three Maryland counties report glitch; problem could be nationwide

by Erin Cunningham and Andrew Ujifusa | Staff Writers

Recently, the industry has observed some heavy call volumes that can result in *Wink Failures* of Selective Router (SR) to Public Safety Answering Point (PSAP) Centralized Automatic Message Accounting (CAMA)[2] trunks. These trunks transmit the caller's Automatic Number Identification (ANI) using Multi-Frequency (MF) digits based upon CAMA signaling standards. CAMA trunk technology, which was originally designed to provide a method for delivering the calling (originating) number from End Office to Toll Office, has widespread support across many platforms within the industry and has proven to be a highly reliable 9-1-1 standard. In the 9-1-1 context, the ANI digits that identify the 9-1-1 caller are relayed across the CAMA trunk to the PSAP. CAMA trunks utilize in-band signaling for call setup and, if the call setup is not successful due to a signaling failure, the SR can remove the CAMA trunk from service.

provides service to emergency dispatch centers.

- Kentlands firehouse could come up for sale
- Community chorus to offer 'eclectic' performance Saturday

Thousands of 911 calls have gone unanswered, said Jamie Barnett, chief of the Federal Communications



Tin Nguyen/The Gazette

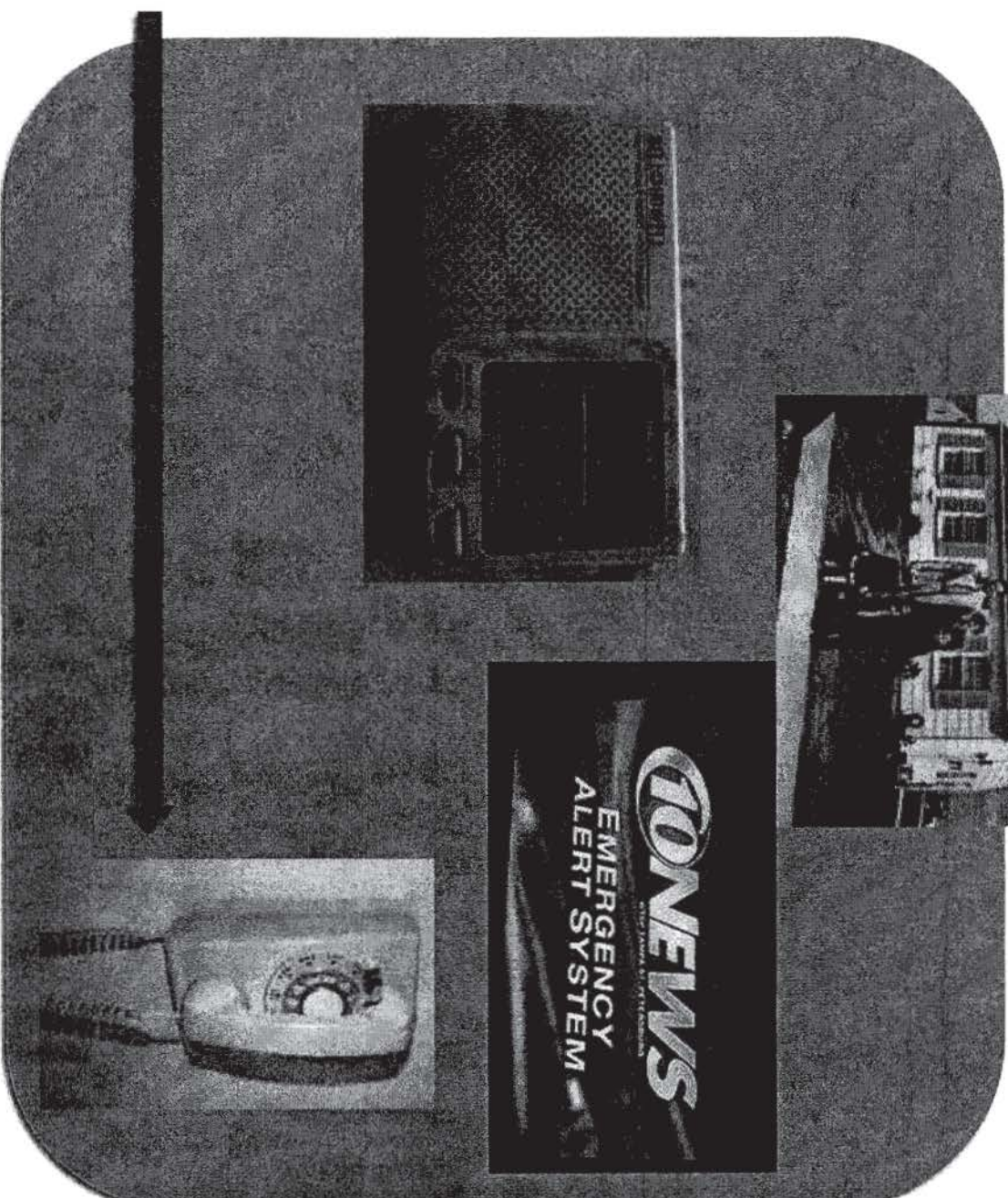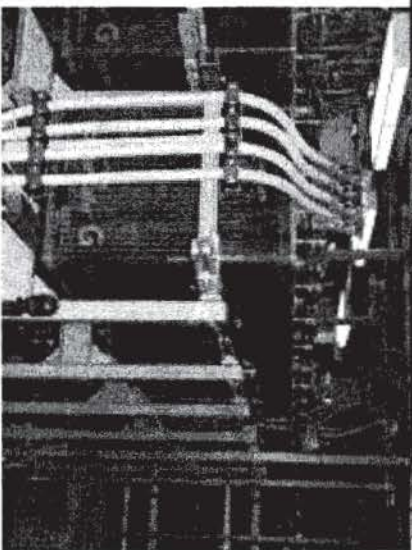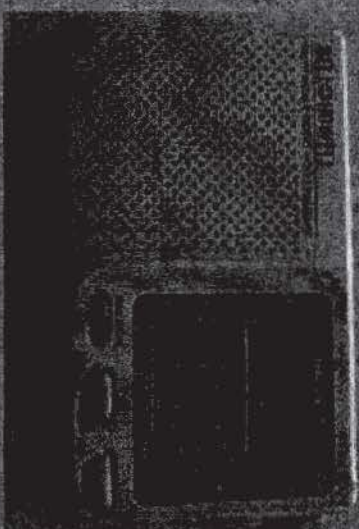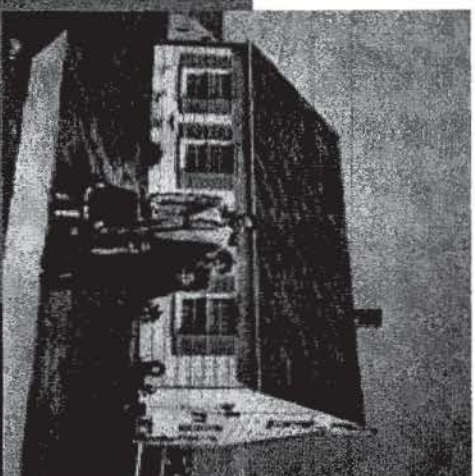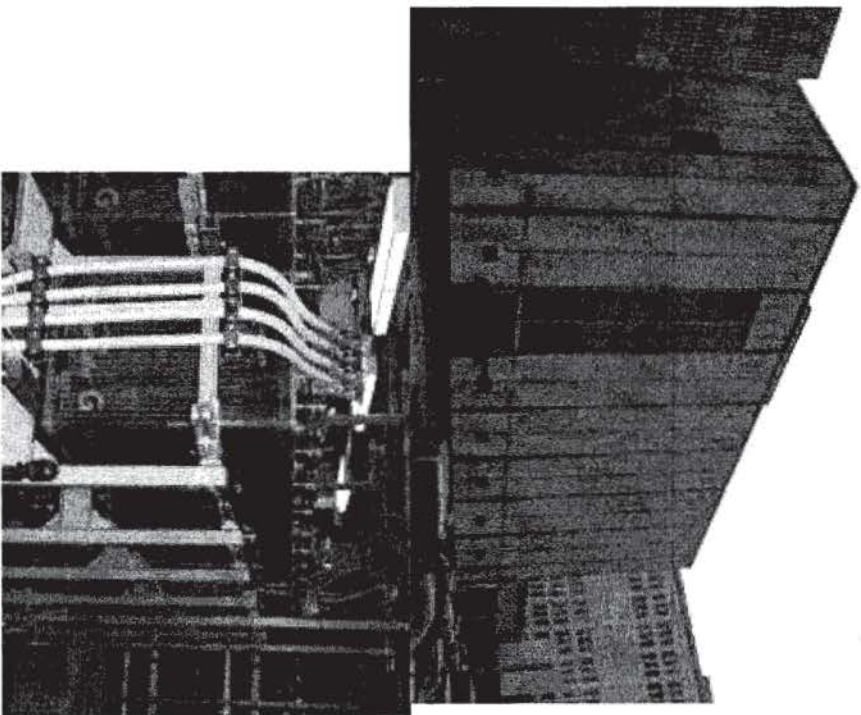David Rotenstein stands by a fence near his Silver Spring home that was nearly ignited Jan. 26 when a downed power line sparked a small fire in the grass. He and his neighbors were unable to reach 911 to report the emergency.
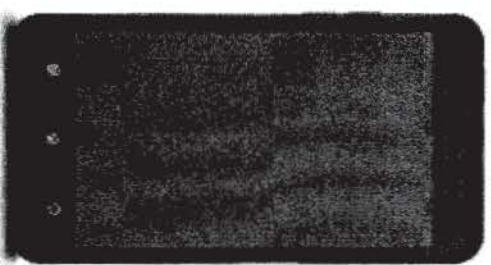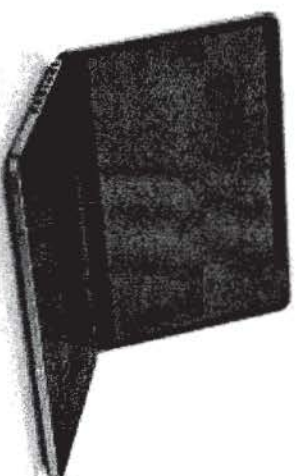
# PUBLIC SAFETY CHALLENGES

# Some public safety challenges

- Telephony denial-of-service attacks
- Transition in user behaviors and home capabilities
- Emergency alerting
  - good for "seek shelter now"
  - not so great for multi-day informational outreach
    - Sandy: "where can I find gas?" "which roads are passable?"
- Redundancy that isn't
  - small number of selective routers or SIP proxies
- One "911" app per PSAP
  - innovate around slow 911 tech evolution
  - but fragmentation
- Indoor location determination

# 1980s home model

10NEWS
EMERGENCY
ALERT SYSTEM

# Typical "Millenials" apartment

# Robocalling



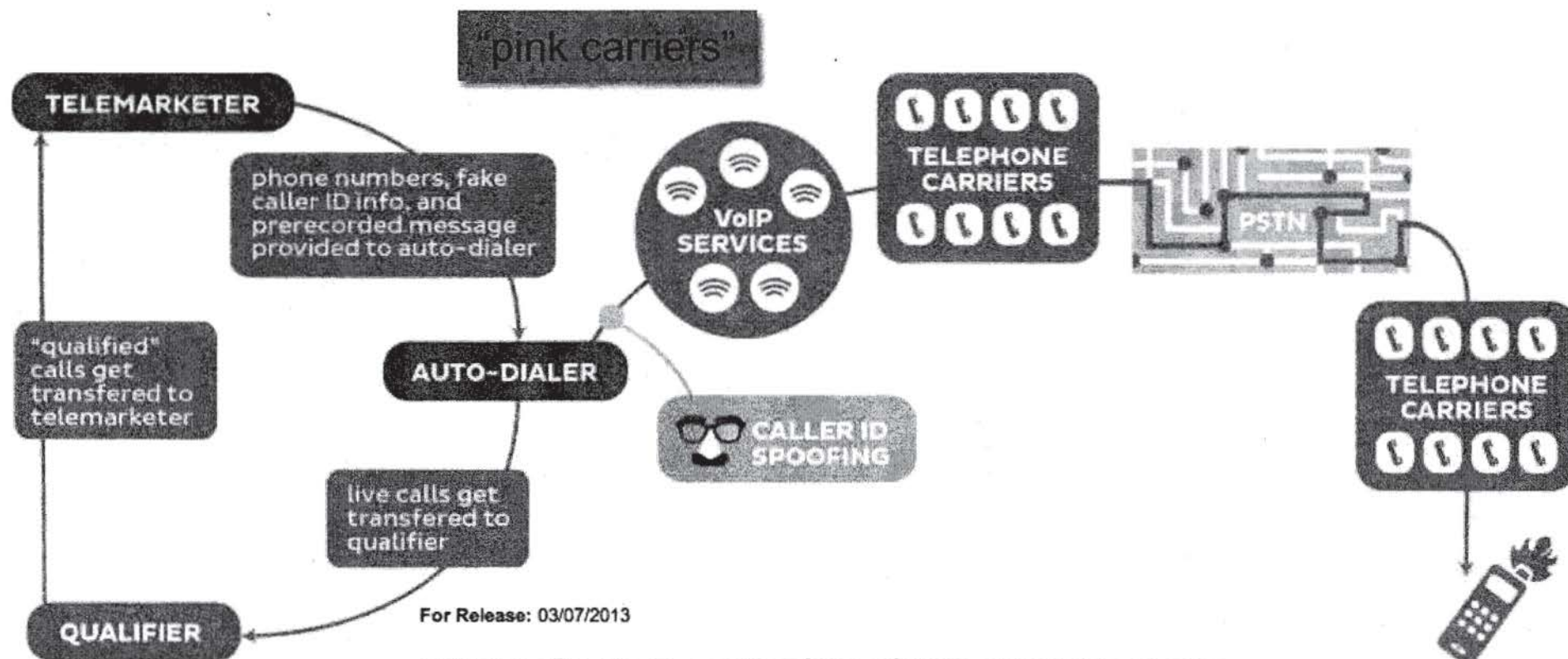"pink carriers"

TELEMARKETER

phone numbers, fake caller ID info, and prerecorded message provided to auto-dialer

VoIP SERVICES

TELEPHONE CARRIERS

PSTN

"qualified" calls get transfered to telemarketer

AUTO-DIALER

CALLER ID SPOOFING

TELEPHONE CARRIERS

live calls get transfered to qualifier

QUALIFIER

For Release: 03/07/2013
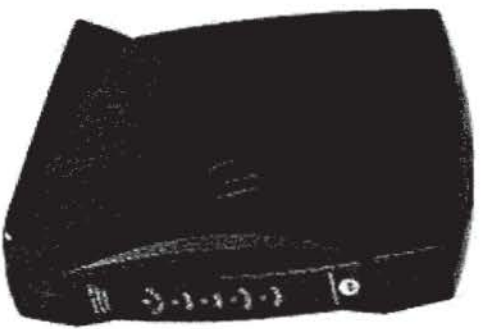
**FTC Cracks Down on Senders of Spam Text Messages Promoting "Free" Gift Cards**

Defendants Were Responsible for More than 180 Million Spam Text Messages

## TDOS

- Payday loan & false tax debt extortion
- "Pay or swamp phone lines"
- Hospitals, PSAPs, schools, …

# KrebsonSecurity
In-depth security news and investigation

**Posts Tagged: Telephony Denial of Service attack**

A Little Sunshine / Latest Warnings / The Coming Storm — 37 Comments

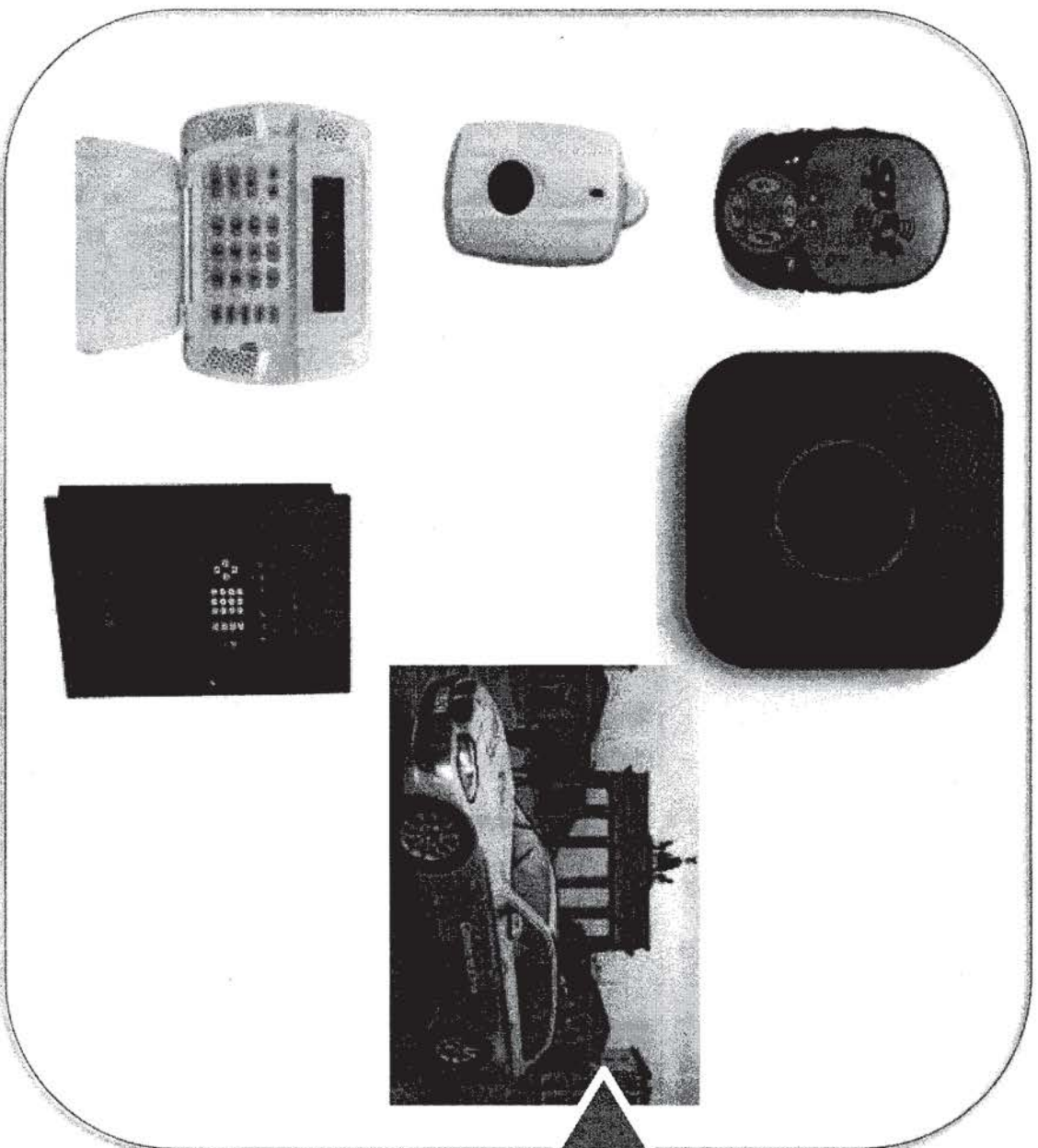## 1 DHS Warns of 'TDos' Extortion Attacks on Public Emergency Networks
APR 13

As if emergency responders weren't already overloaded: Increasingly, extortionists are launching debilitating attacks designed to overwhelm the telephone networks of emergency communications centers and personnel, according to a confidential alert jointly issued by the **Department of Homeland Security** and the **FBI**.

The alert, a copy of which was obtained by KrebsOnSecurity, warns public safety answering points (PSAPs)

MSAIC Fusion Center
Situational Awareness Bulletin
TDoS Attacks on Public Safety Communications

The Department of Homeland Security (DHS) NCCIC - National Coordinating Center for Communications –

# "Indirect" 911



screen

PSAP

# OPPORTUNITIES